

CLAIMS

1. A battery charge system for a vehicle, including:

a controller that detects a charging session where a battery in the vehicle is charged by an external battery charger, the controller upon detecting the charging session activating a fan located in the vehicle for cooling the battery during the charging session.

2. A system according to claim 1 including a sensor that identifies a start of the charging session either when the external battery charger connects to the battery or when the battery charger starts charging the battery.

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3. A system according to claim 1 including an interlock switch that connects the battery charger to the fan or connects the battery to the fan during the charging session.

4. A system according to claim 3 wherein the interlock switch disconnects other electric equipment in the vehicle from the battery during the charging session and reconnects the other electric equipment back to the battery when the charging session is completed.

5. A system according to claim 3 including a filter coupled between the interlock switch and the fan that filters large charge surges from the battery charger from reaching the fan.

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6. A system according to claim 1 including a battery monitor that monitors battery parametric information, the battery monitor or the controller activating the fan when the charging session is detected and the battery monitor controlling the charging session with the battery charger according to a reduced battery temperature provided by the fan.

7. A system according to claim 6 wherein the controller monitors and stores vehicle operational data and then downloads the stored data to the battery monitor, the battery monitor then sending the data through a cable coupled between the battery monitor and the battery charger to a computer coupled to the battery charger.

8. A system according to claim 1 wherein the controller predicts an amount of remaining vehicle operating time according to both battery charge information and vehicle operating parameters.

15 9. A system according to claim 8 wherein the controller monitors and stores a profile of vehicle operation and adjusts the predicted amount of remaining vehicle operating time according to the vehicle operation profile.

10. A system according to claim 9 wherein the controller predicts a duration of an upcoming vehicle operating session, predicts whether or not the battery has enough charge to operate the vehicle for the predicted duration, and displays results of the predictions

20 11. A method for charging a battery, comprising:
detecting a charging session where a battery charger starts charging a battery located
25 in a vehicle; and
automatically activating a fan in the vehicle to blow air on the battery when the charging session is detected.

5 12. The method according to claim 11 including detecting the charging session when a connector for the battery charger is physically coupled to a connector for the battery or when the battery charger starts supplying charge to the battery.

10 13. The method according to claim 11 including automatically directing energy from the battery charger to the fan and disconnecting other electrical equipment in the vehicle from the battery when the charging session is detected.

15 14. The method according to claim 13 including connecting the battery charger to the fan during the charging session, disconnecting the battery charger from the fan at the completion of the charging session, and connecting the battery to the fan at the completion of the charging session to remove residual heat from the battery after the battery charger has been shut-off.

20 15. The method according to claim 11 including monitoring operating parameters for the battery and activating the fan according to the monitored battery operating parameters.

16. The method according to claim 11 including monitoring vehicle operation parameters and downloading the monitored vehicle operation parameters through the battery charger to a computer.

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17. The method according to claim 11 including:
generating a vehicle operation profile identifying when and how long an electric motor in the vehicle is activated by the battery;
monitoring an amount of charge remaining in the battery; and

5 predicting an amount of time the battery can continue to operate the electric motor according to the monitored operation history and the monitored battery charge.

18. A method according to claim 11 including:

10 tracking past battery discharge rates while the battery is operating an electric motor in the vehicle;

measuring a charge remaining in the battery; and

predicting an amount of time the battery can operate the electric motor according to the tracked past battery discharge rates and the measured remaining charge in the battery.

15 19. A battery charging system for a vehicle, comprising:

a battery located in the vehicle for powering an electric motor used for locomotion in the vehicle;

a fan permanently installed in the vehicle and directed toward the battery;

a battery charger; and

20 a controller automatically activating the fan when the battery charger initiates charging of the battery.

20. A battery charging system according to claim 19 including switching circuitry in the vehicle that automatically maintains or connects power from the battery charges to the fan and automatically disconnects power from the battery charger from other vehicle electrical equipment while the battery charger charges the battery.